

# KIC 006303971

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006303971-01	OBS	No	530.107313	434.352146	721.3	9.068	8.4	8.1	0.74	4985	2.10	0.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006303971-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

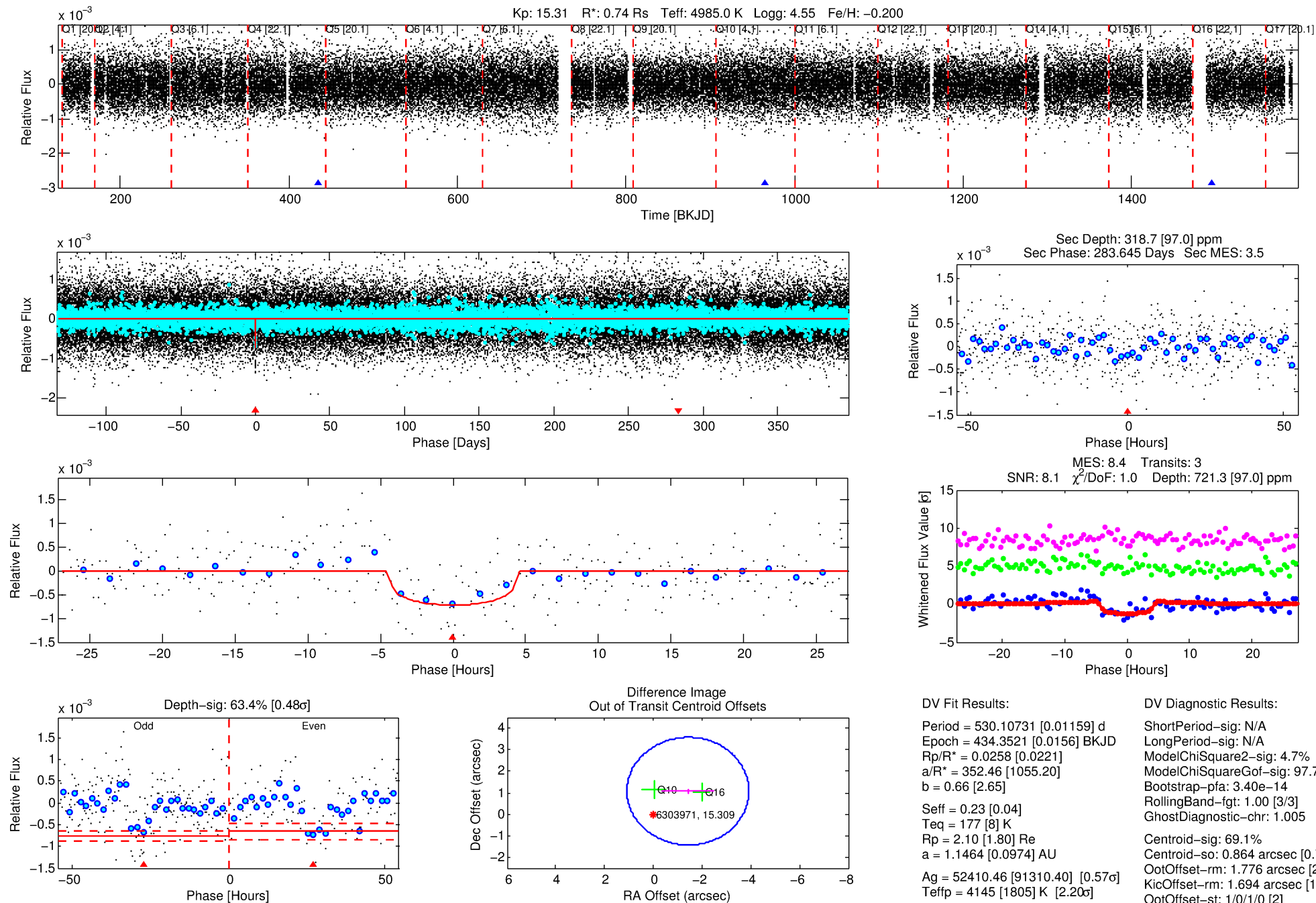
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006303971-01

No Significant Match Found

# DV One-Page Summary

KIC: 6303971 Candidate: 1 of 1 Period: 530.107 d



## DV Fit Results:

Period = 530.10731 [0.01159] d  
Epoch = 434.3521 [0.0156] BKJD  
Rp/R\* = 0.0258 [0.0221]  
a/R\* = 352.46 [1055.20]  
b = 0.66 [2.65]  
Seff = 0.23 [0.04]  
Teq = 177 [8] K  
Rp = 2.10 [1.80] Re  
a = 1.1464 [0.0974] AU  
Ag = 52410.46 [91310.40] [0.57 $\sigma$ ]  
Teff = 4145 [1805] K [2.20 $\sigma$ ]

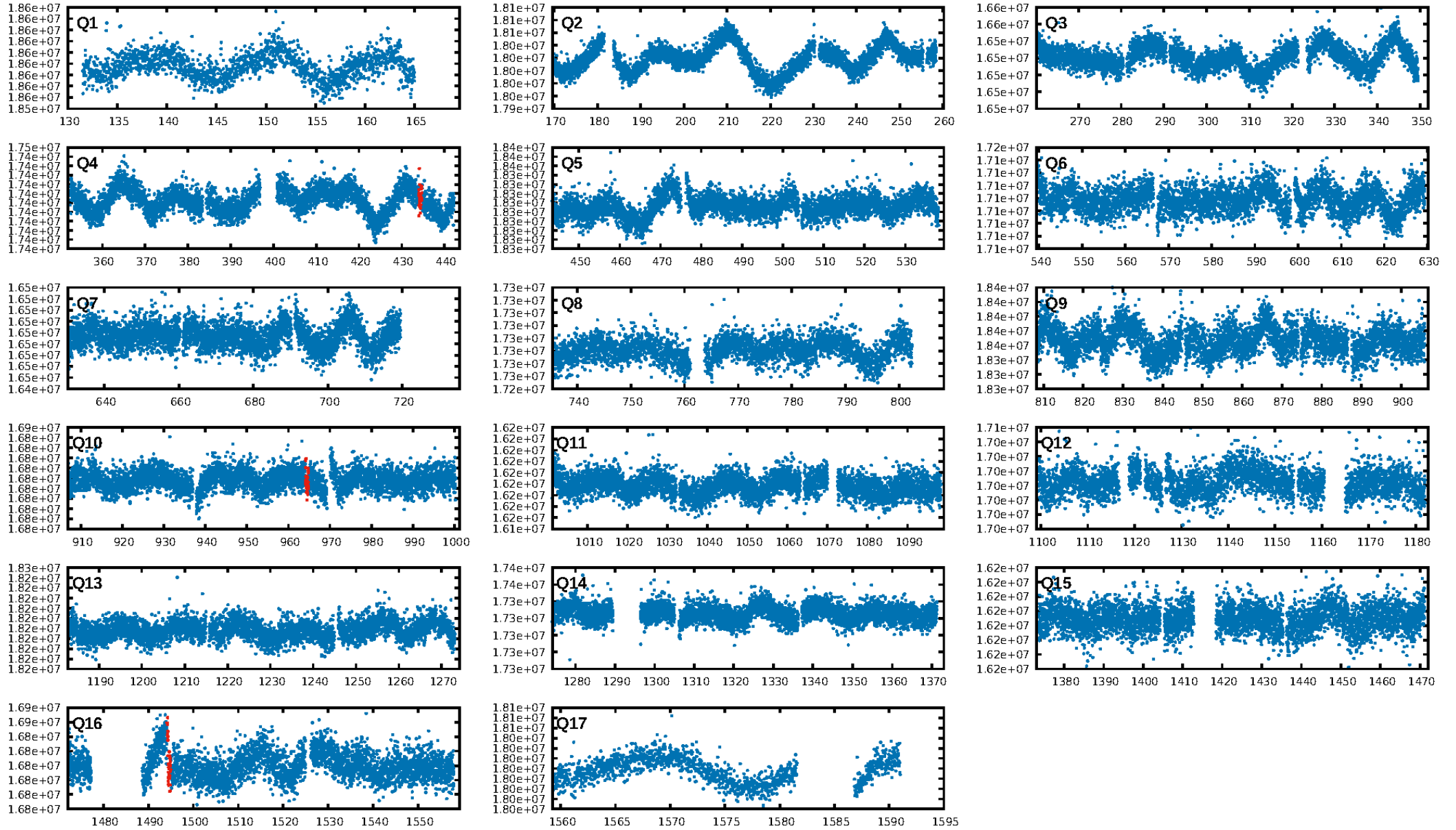
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 4.7%  
ModelChiSquareGof-sig: 97.7%  
Bootstrap-pfa: 3.40e-14  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.005  
Centroid-sig: 69.1%  
Centroid-so: 0.864 arcsec [0.78 $\sigma$ ]  
OotOffset-rm: 1.776 arcsec [2.13 $\sigma$ ]  
KicOffset-rm: 1.694 arcsec [1.99 $\sigma$ ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

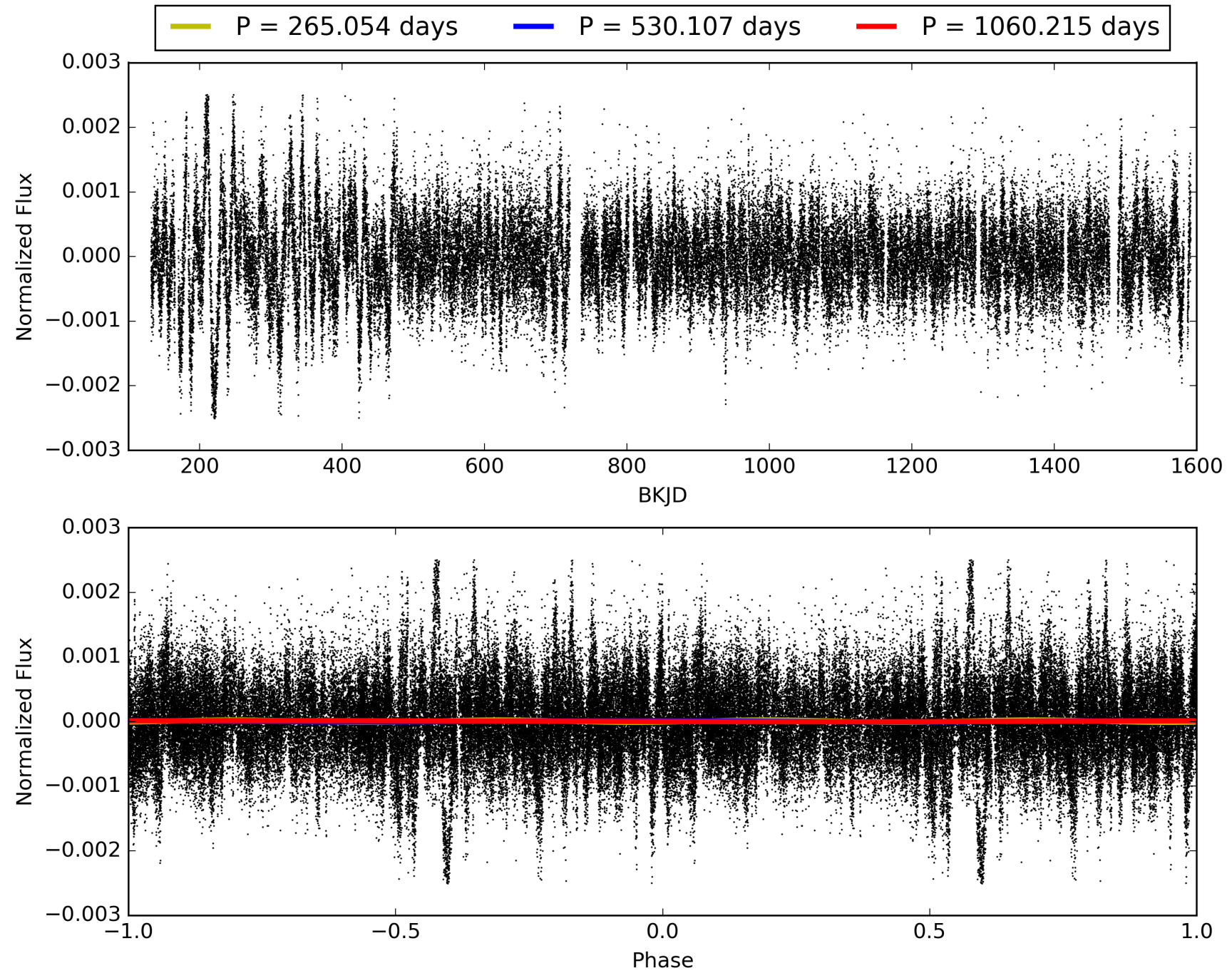
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:16:48 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006303971-01, PDC Light Curves

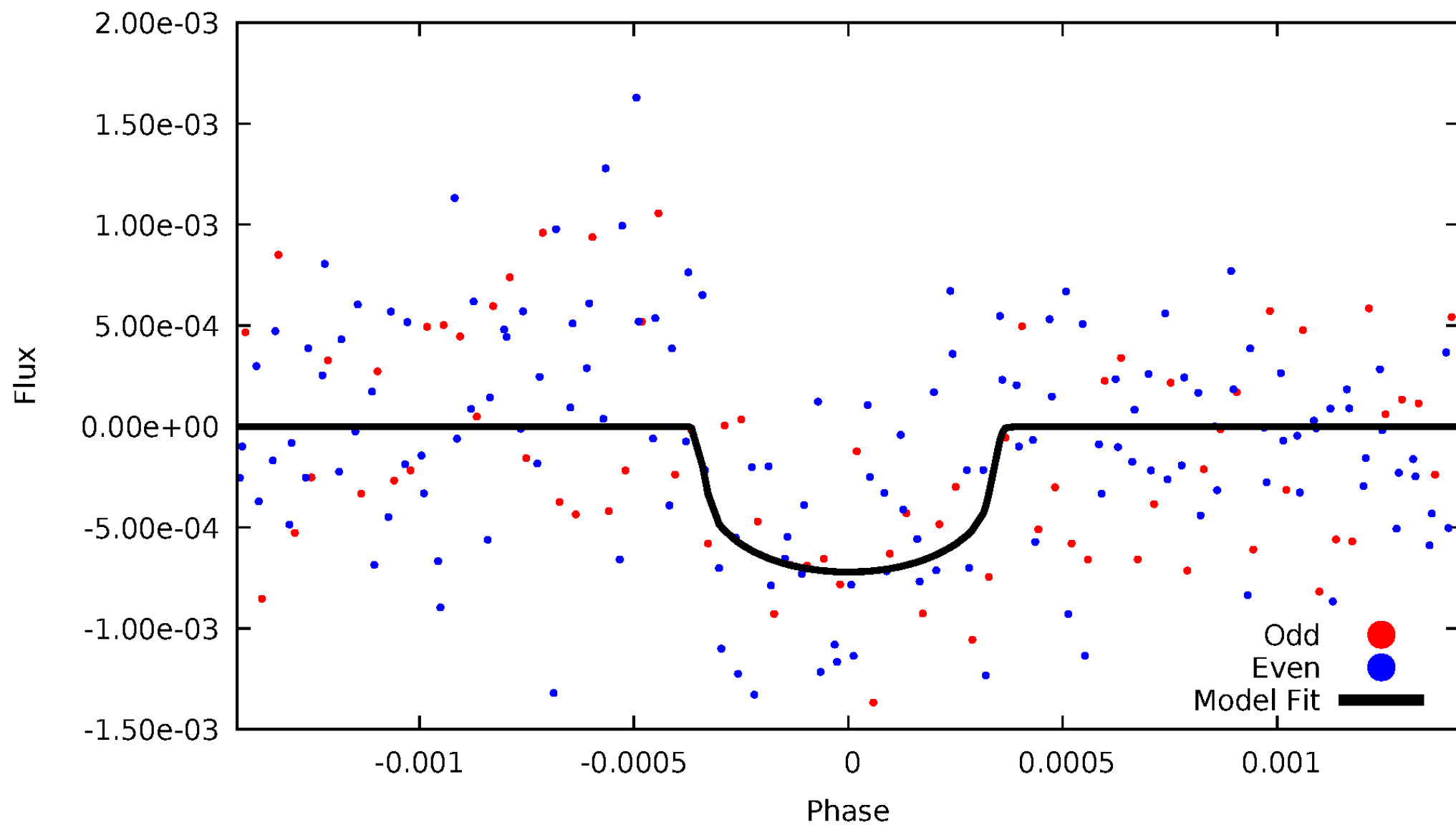


TCE 006303971-01



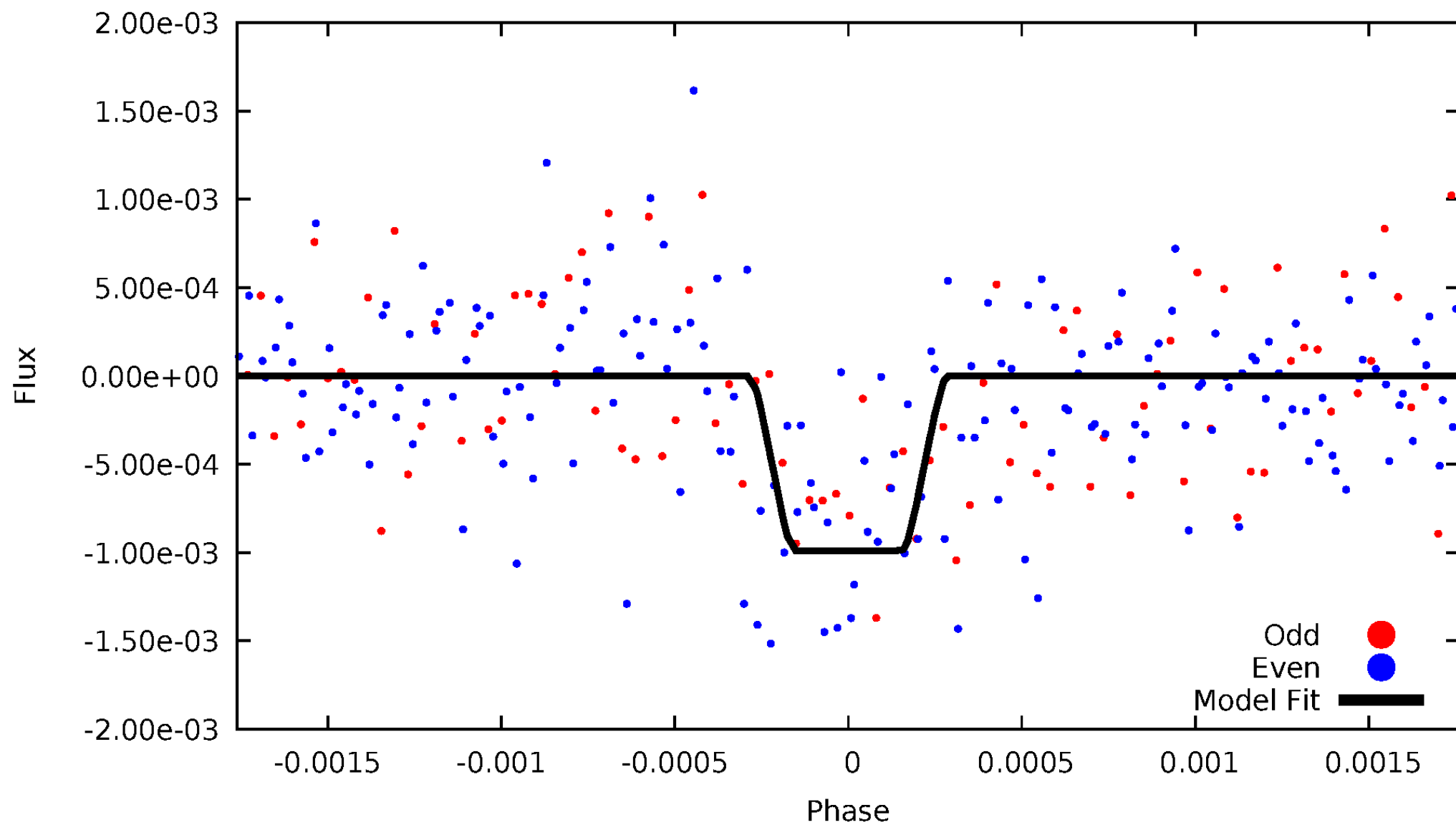
# DV Odd/Even

TCE 006303971-01



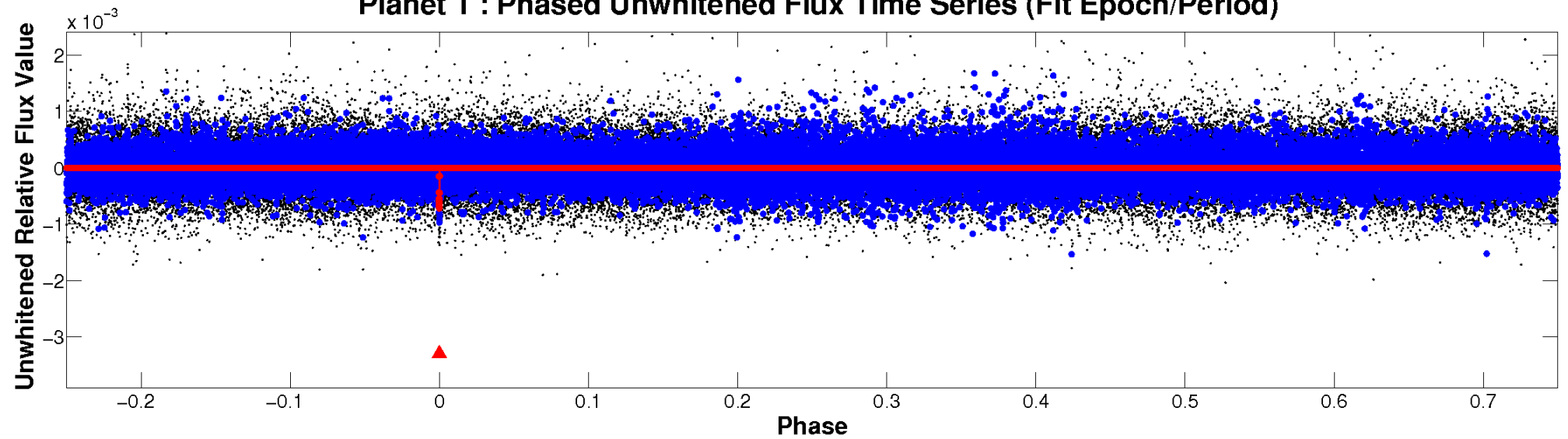
# ALT Odd/Even

TCE 006303971-01

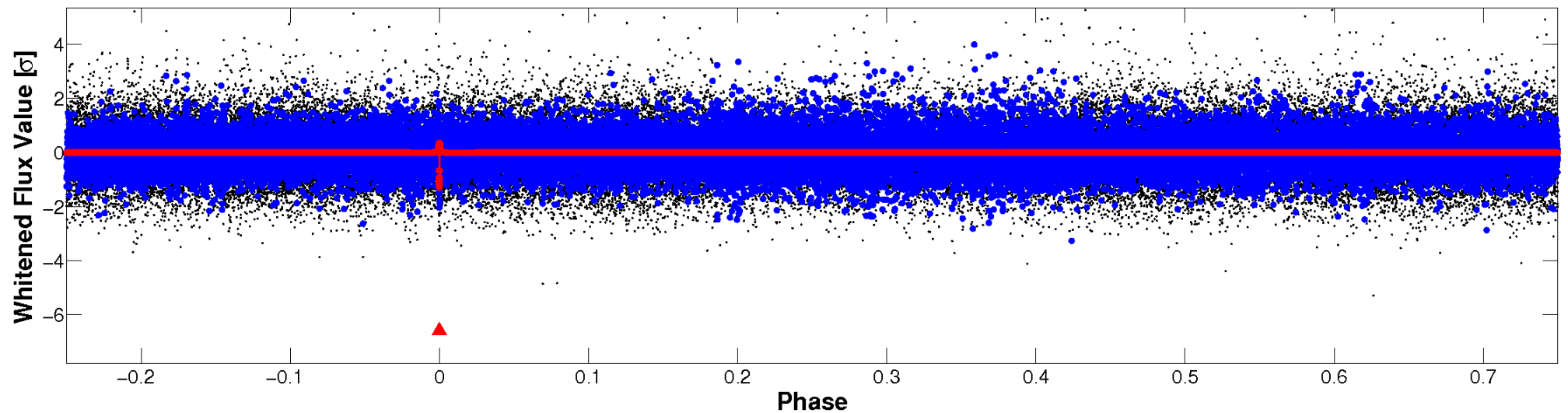


# Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

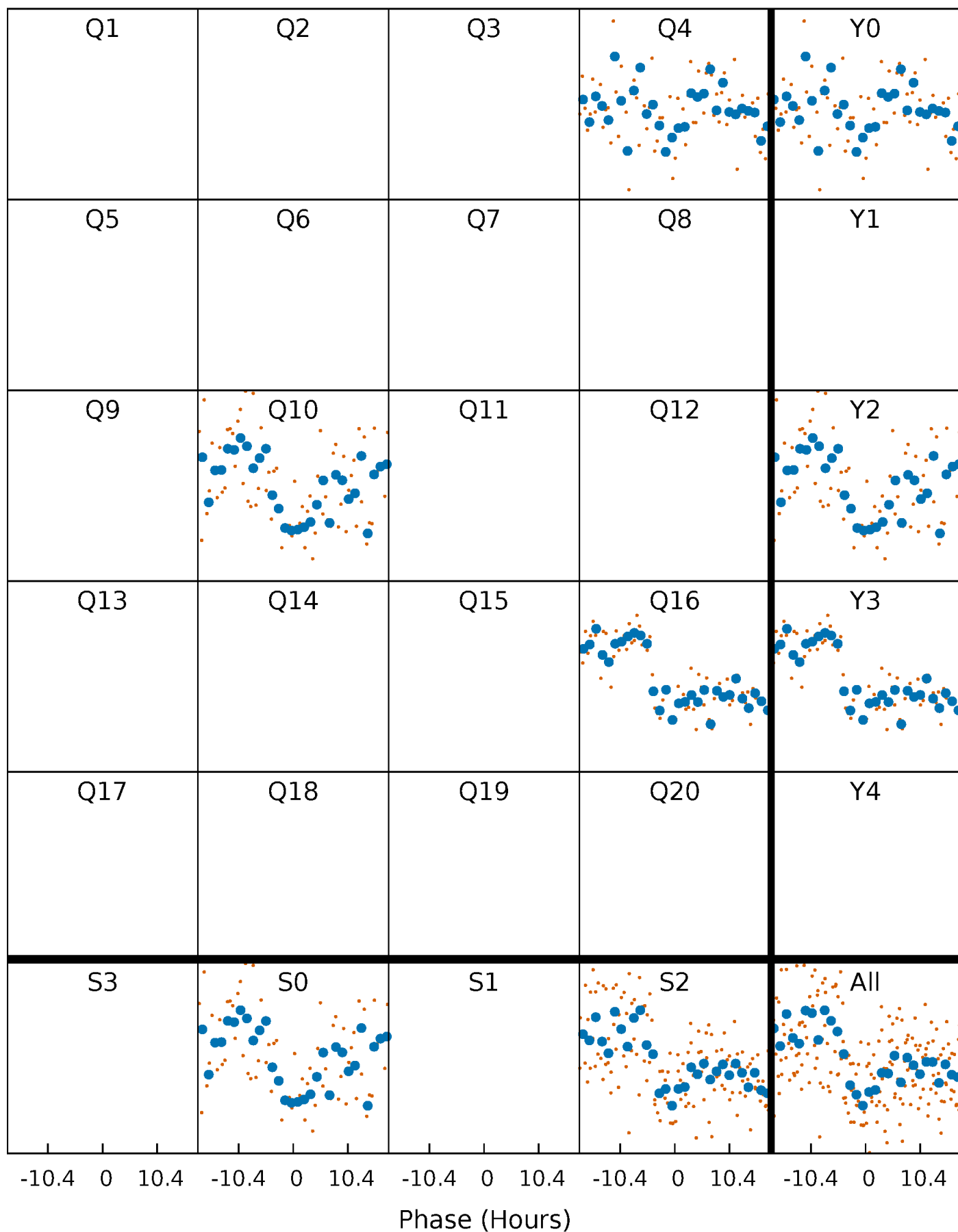


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



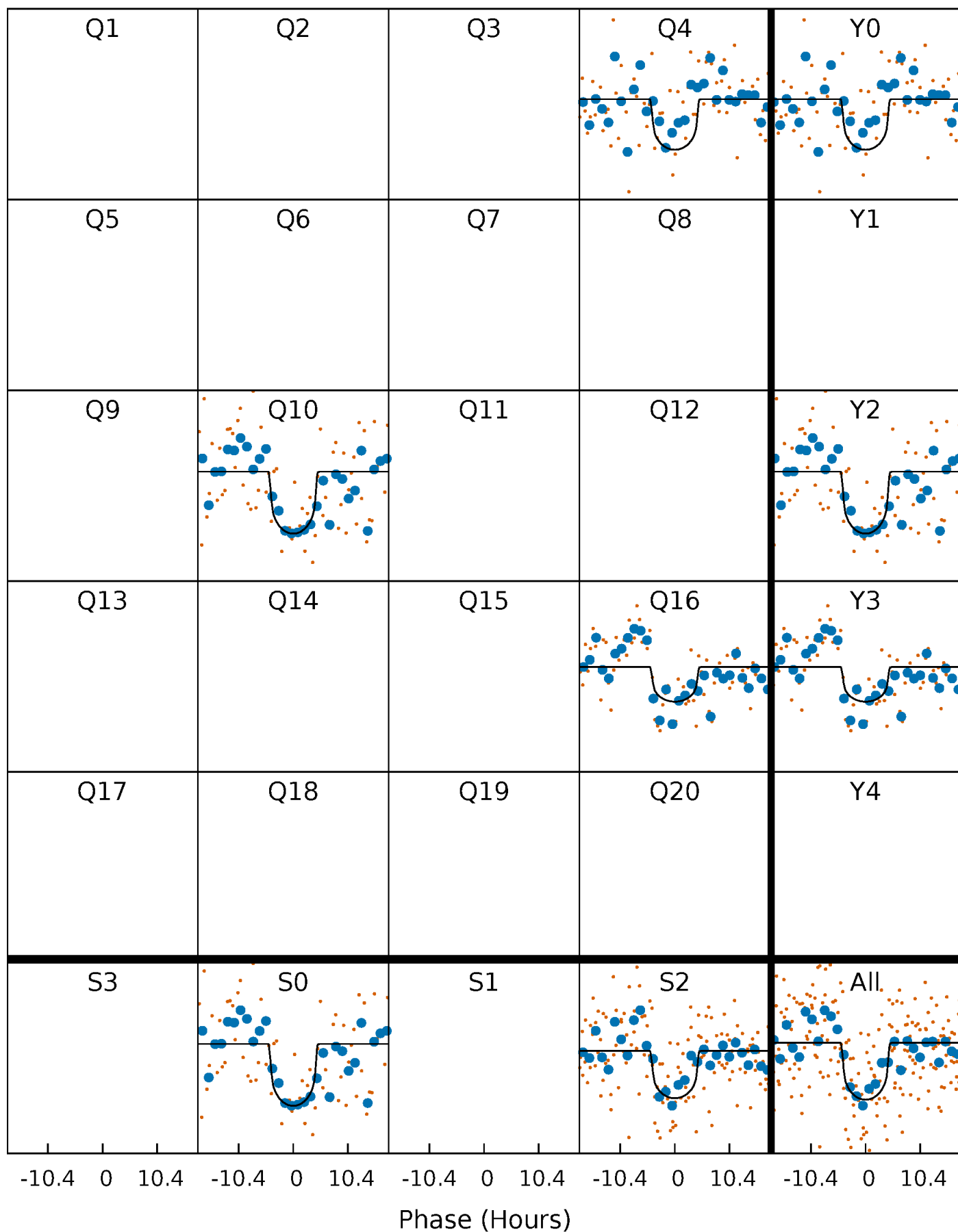
# PDC Quarter-Phased Transit Curves

TCE 006303971-01 P=530.107313 Days  $T_0=434.352146$  (BKJD)



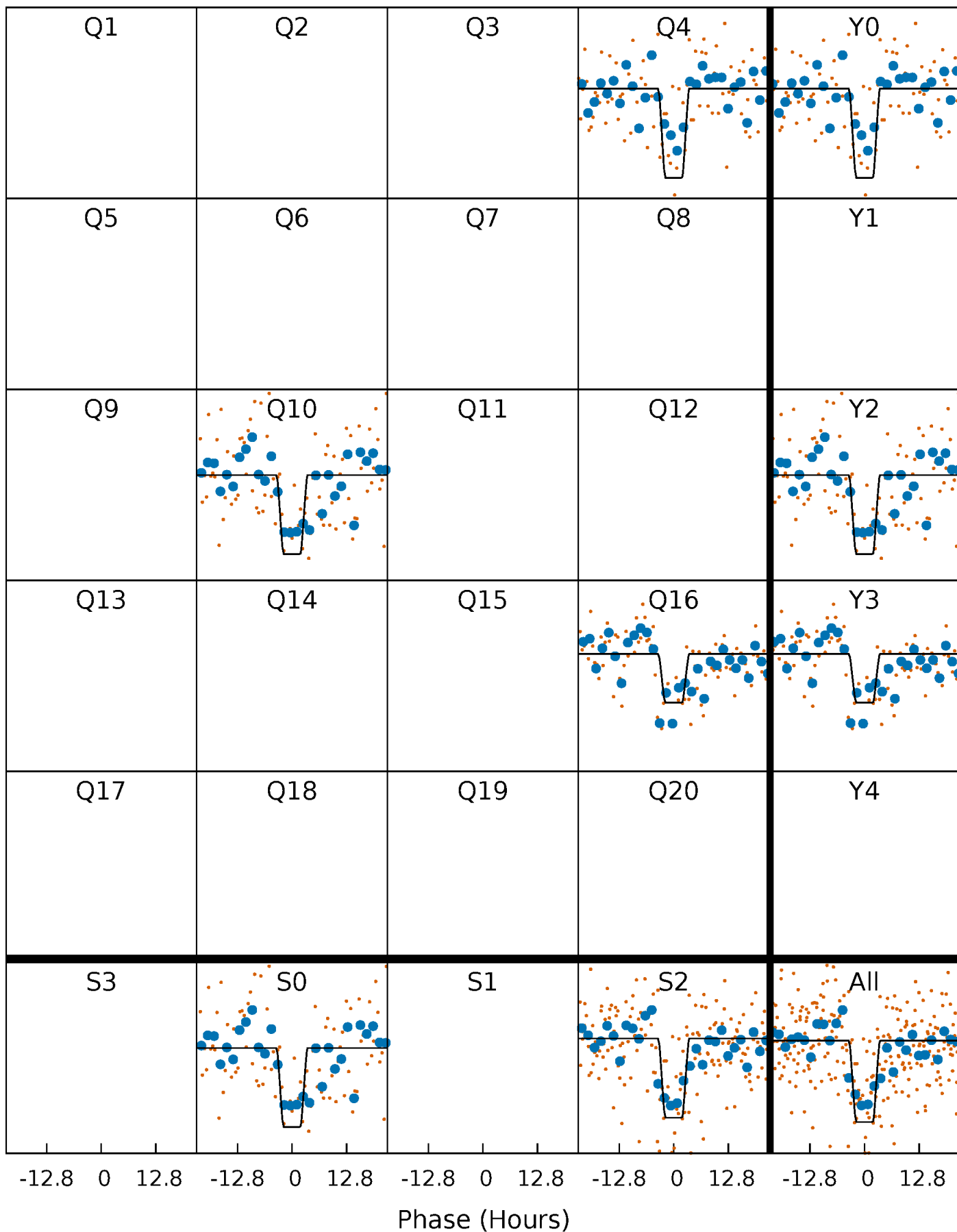
# DV Quarter-Phased Transit Curves

TCE 006303971-01 P=530.107313 Days  $T_0=434.352146$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

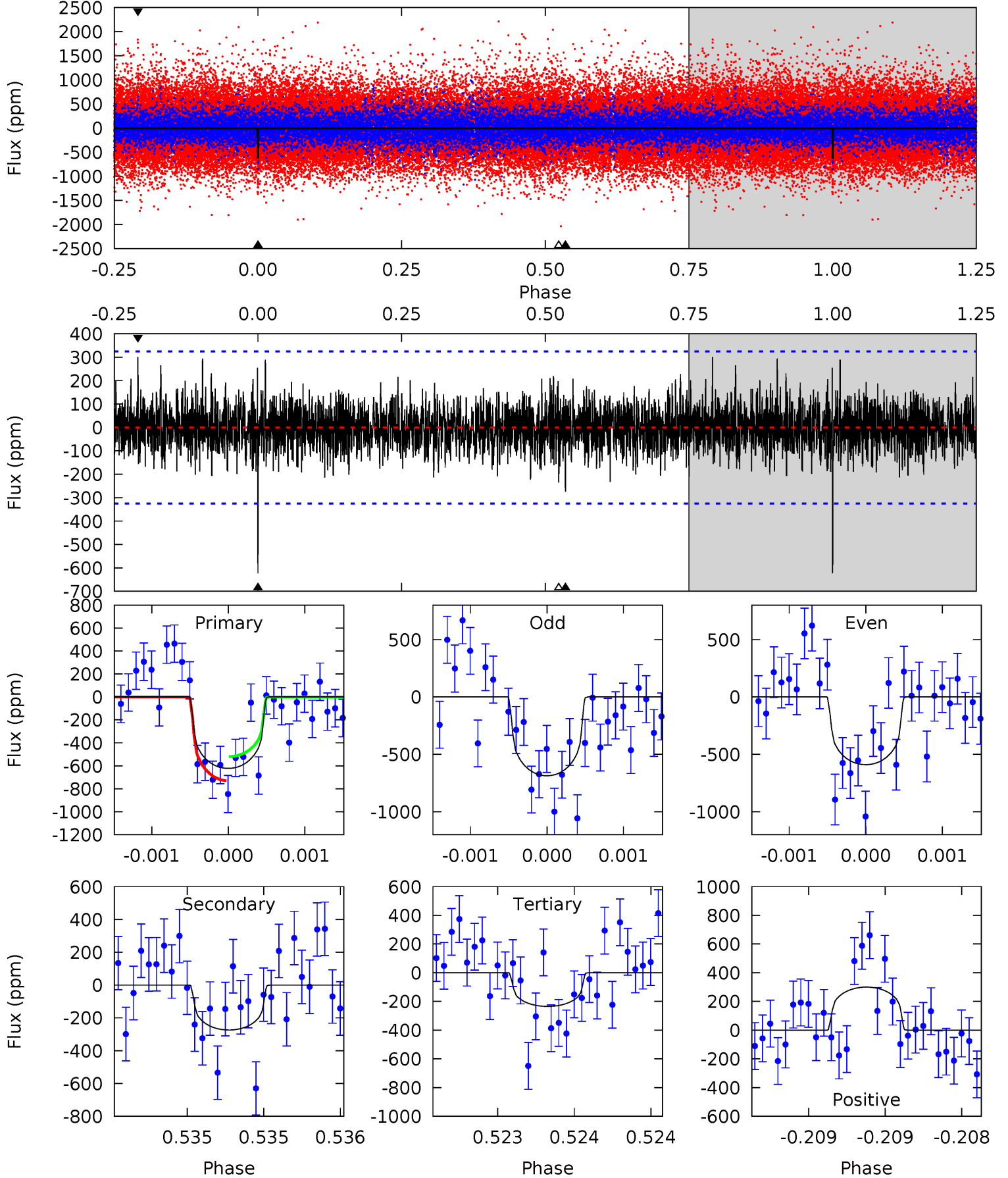
TCE 006303971-01 P=530.121469 Days  $T_0=434.326181$  (BKJD)



# DV Model-Shift Uniqueness Test

006303971-01, P = 530.107313 Days, E = 434.352146 Days

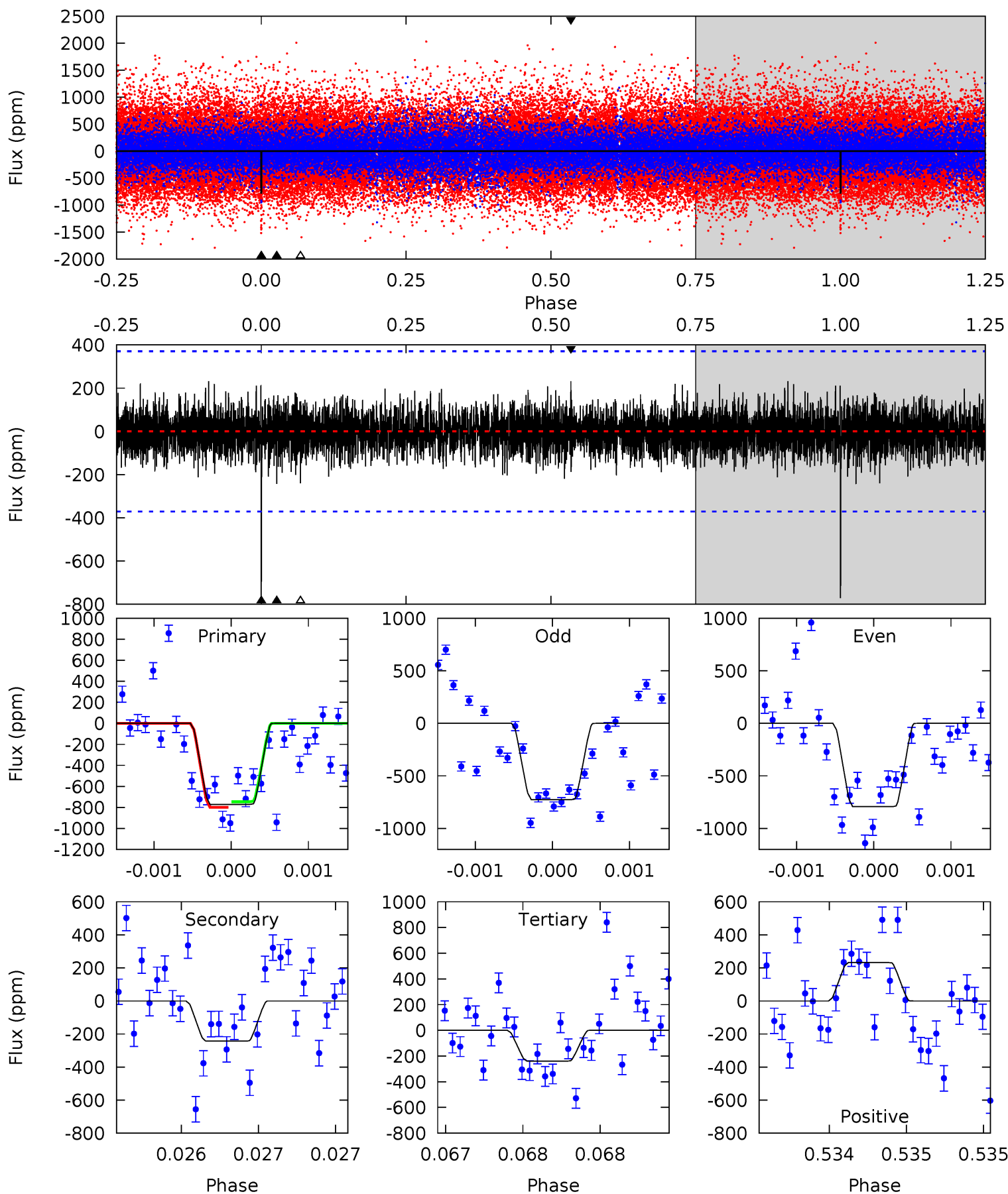
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	4.65	3.98	5.09	5.51	3.38	1.21	6.57	5.46	0.67	-0.44	0.78	0.91	0.33	1.78



# Alt Model-Shift Uniqueness Test

006303971-01, P = 530.121469 Days, E = 434.326181 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	3.64	3.59	3.48	5.56	3.46	0.98	7.97	8.07	0.06	0.16	0.47	1.06	0.23	0.40



### Stellar Parameters For KIC 006303971

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4985^{+151}_{-136}$	$4.549^{+0.072}_{-0.054}$	$-0.200^{+0.300}_{-0.300}$	$0.744^{+0.072}_{-0.072}$	$0.716^{+0.093}_{-0.057}$	$2.446^{+0.750}_{-0.433}$
	+3%/-3%	+2%/-1%	+150%/-150%	+10%/-10%	+13%/-8%	+31%/-18%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006303971-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-274 \pm 59$	$2.31^{+1.71}_{-1.37}$	$247^{+9}_{-9}$	$4047^{+1872}_{-693}$	$38446^{+185731}_{-26676}$
Alt.	$-243 \pm 67$	$2.74^{+1.70}_{-1.54}$	$247^{+9}_{-10}$	$3706^{+1439}_{-544}$	$22597^{+101395}_{-14419}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

## DV Centroid Data

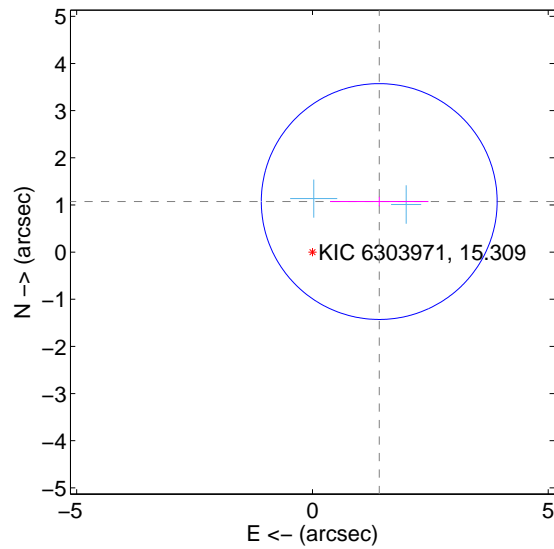
Supplemental centroid analysis for 006303971-01. Kepler magnitude: 15.31. Transit SNR 8.09

There are 2 quarters with good PRF difference image offsets

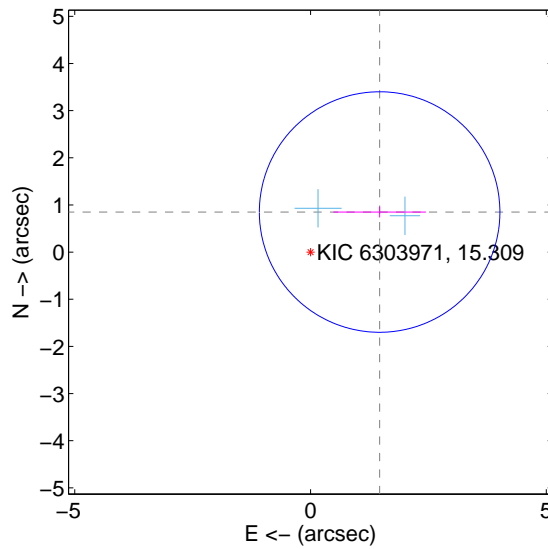
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.776 \pm 0.834$	2.13	$-1.416 \pm 1.043$	$1.072 \pm 0.099$
PRF-fit source offset from KIC position	$1.694 \pm 0.850$	1.99	$-1.466 \pm 0.981$	$0.850 \pm 0.114$
photometric centroid source offset	$0.86 \pm 1.11$	0.78	$-0.86 \pm 1.11$	$-0.02 \pm 1.16$

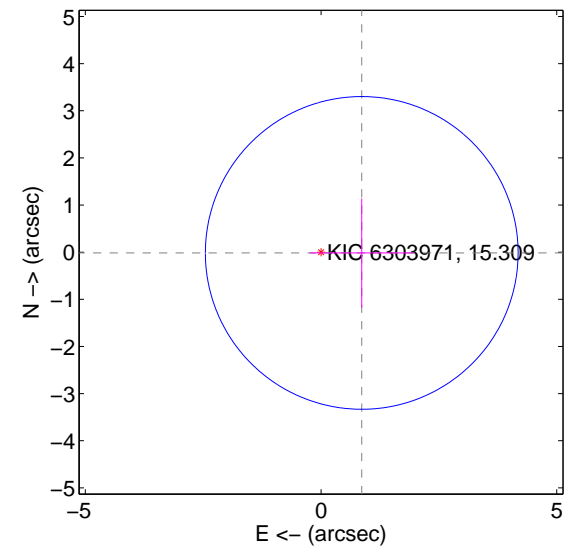
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

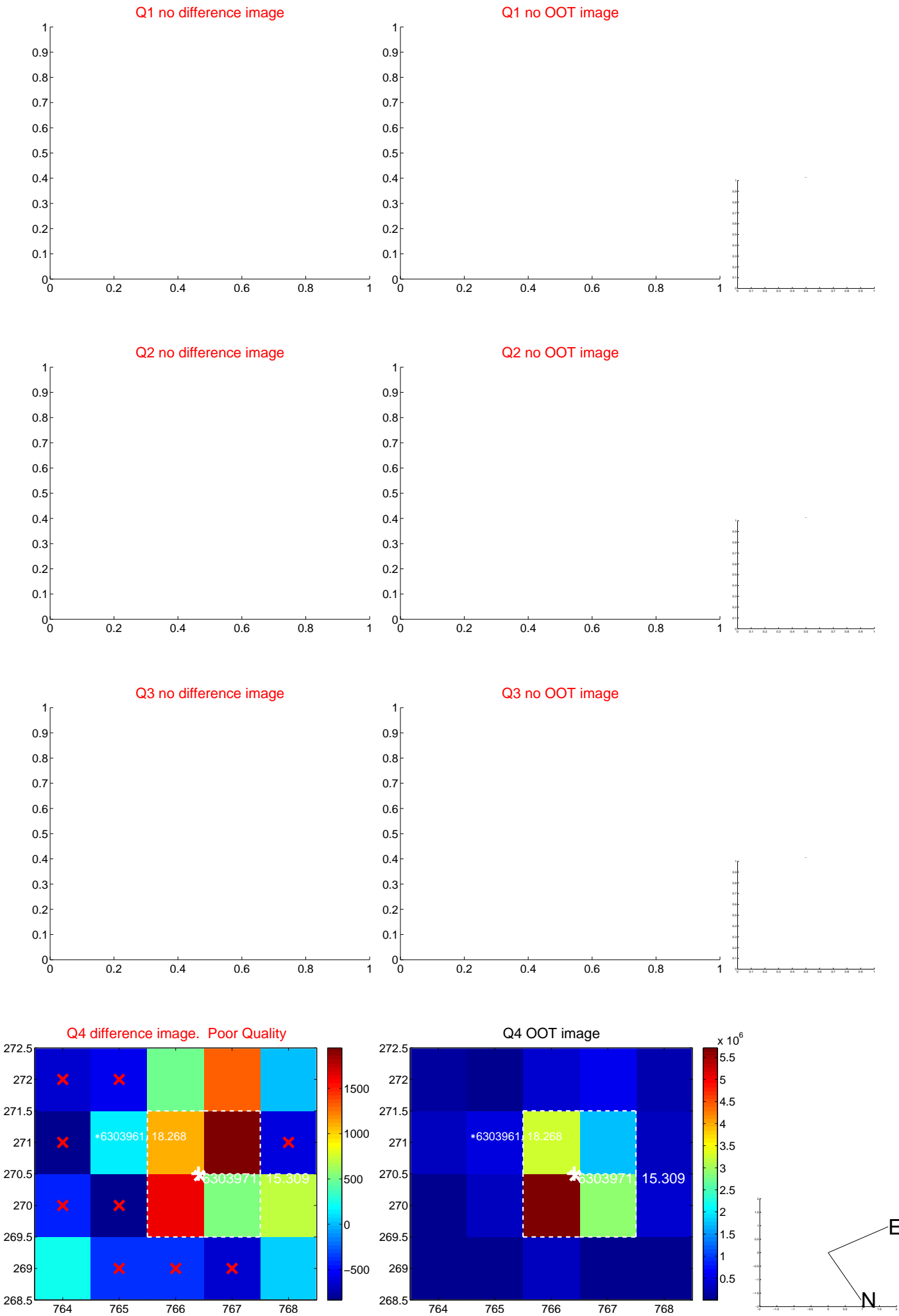


offset from photometric centroids

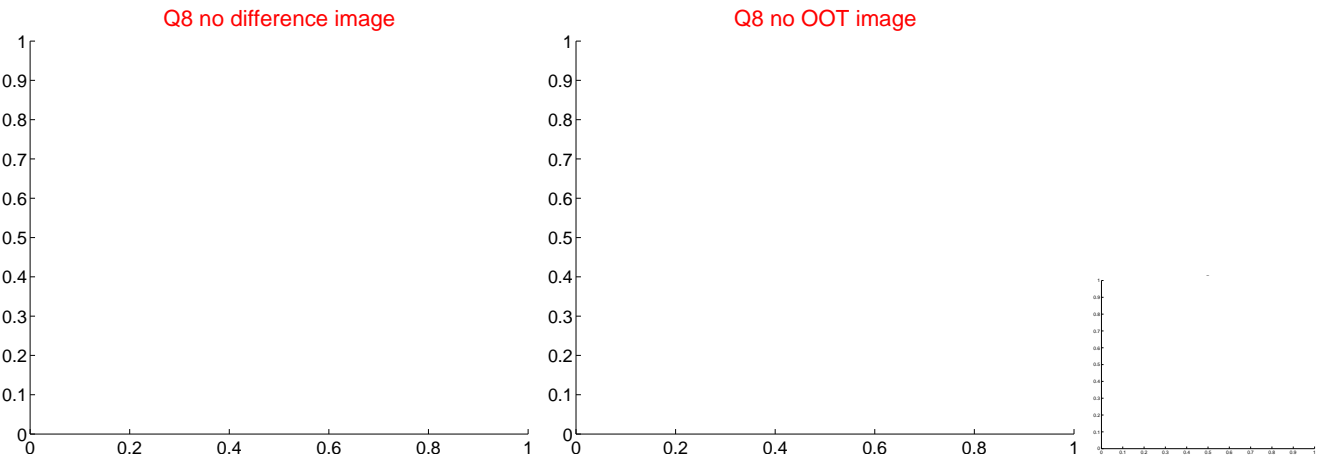


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

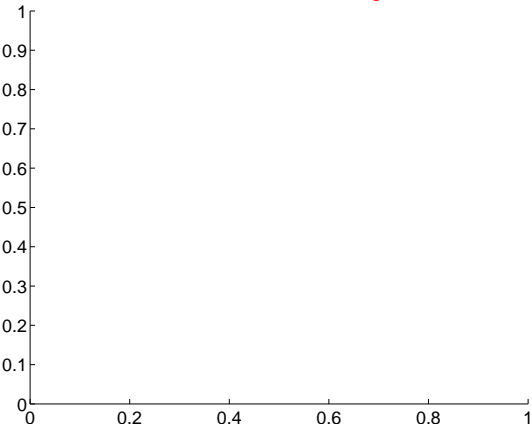


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

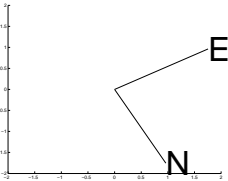
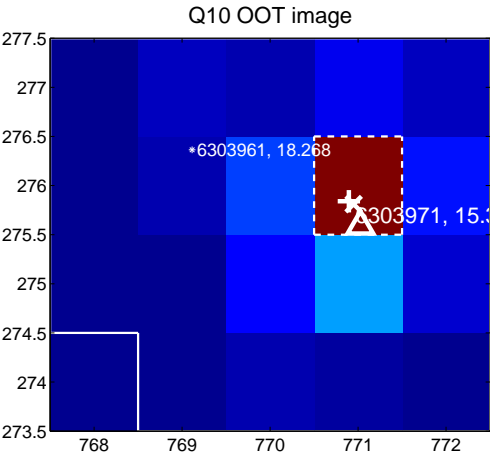
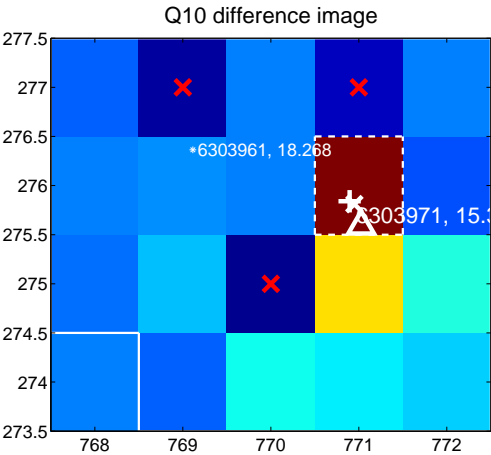
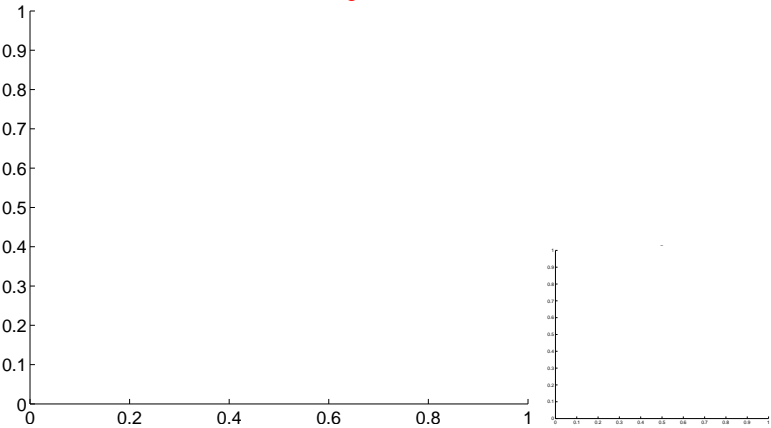


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

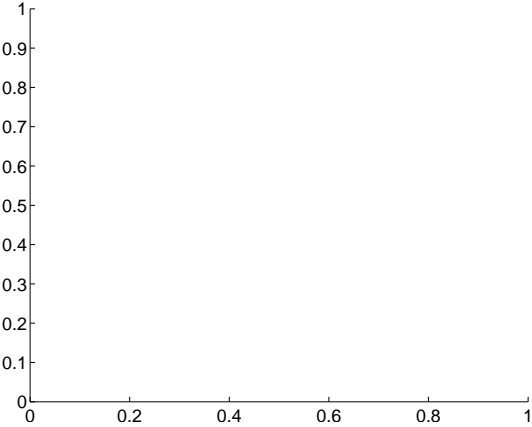
Q9 no difference image



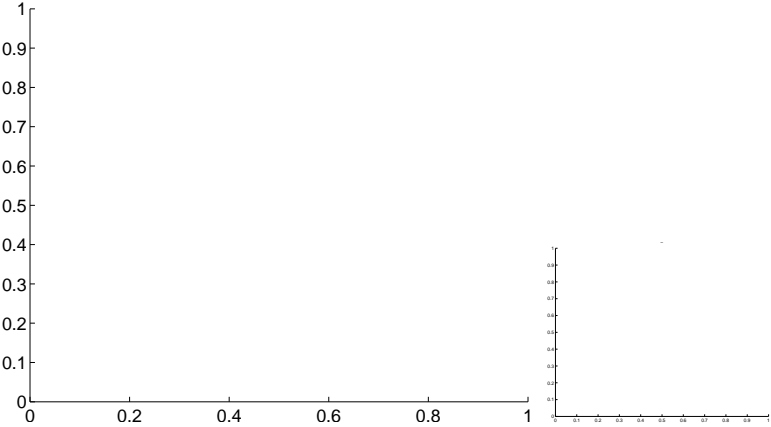
Q9 no OOT image



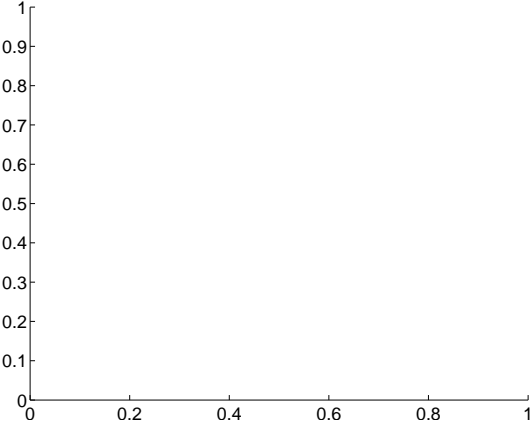
Q11 no difference image



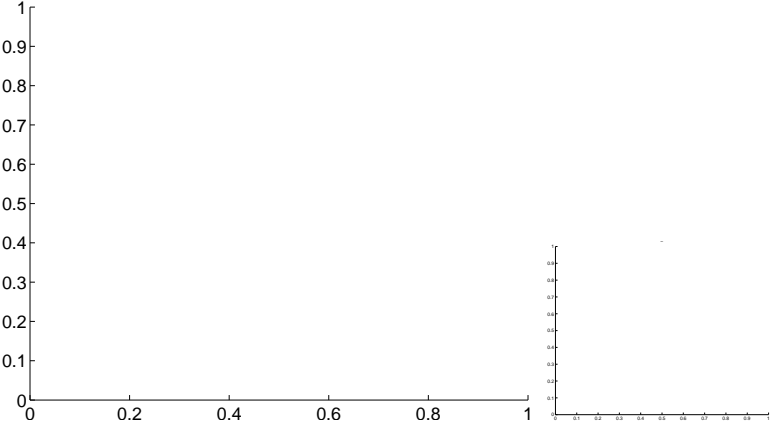
Q11 no OOT image



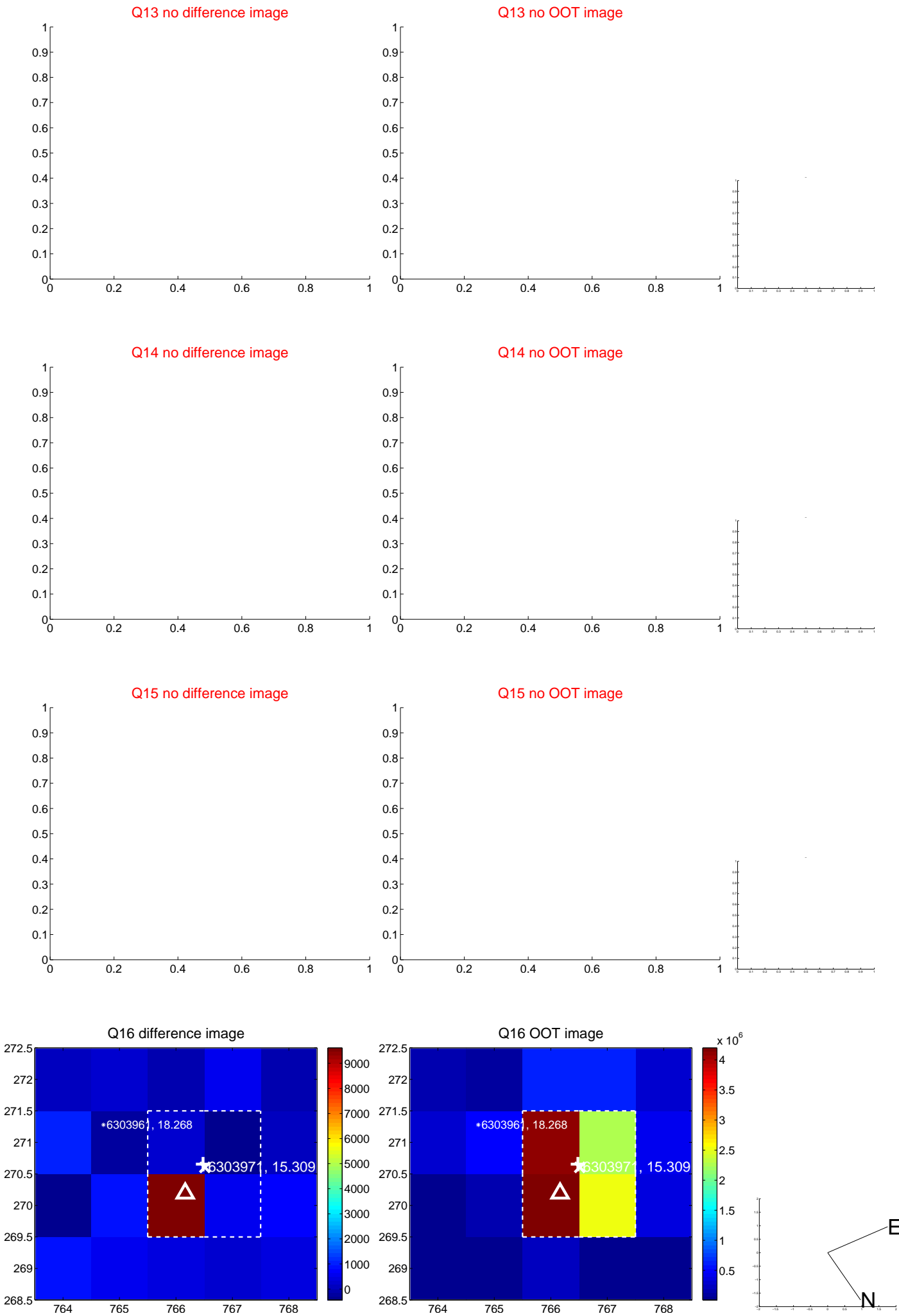
Q12 no difference image



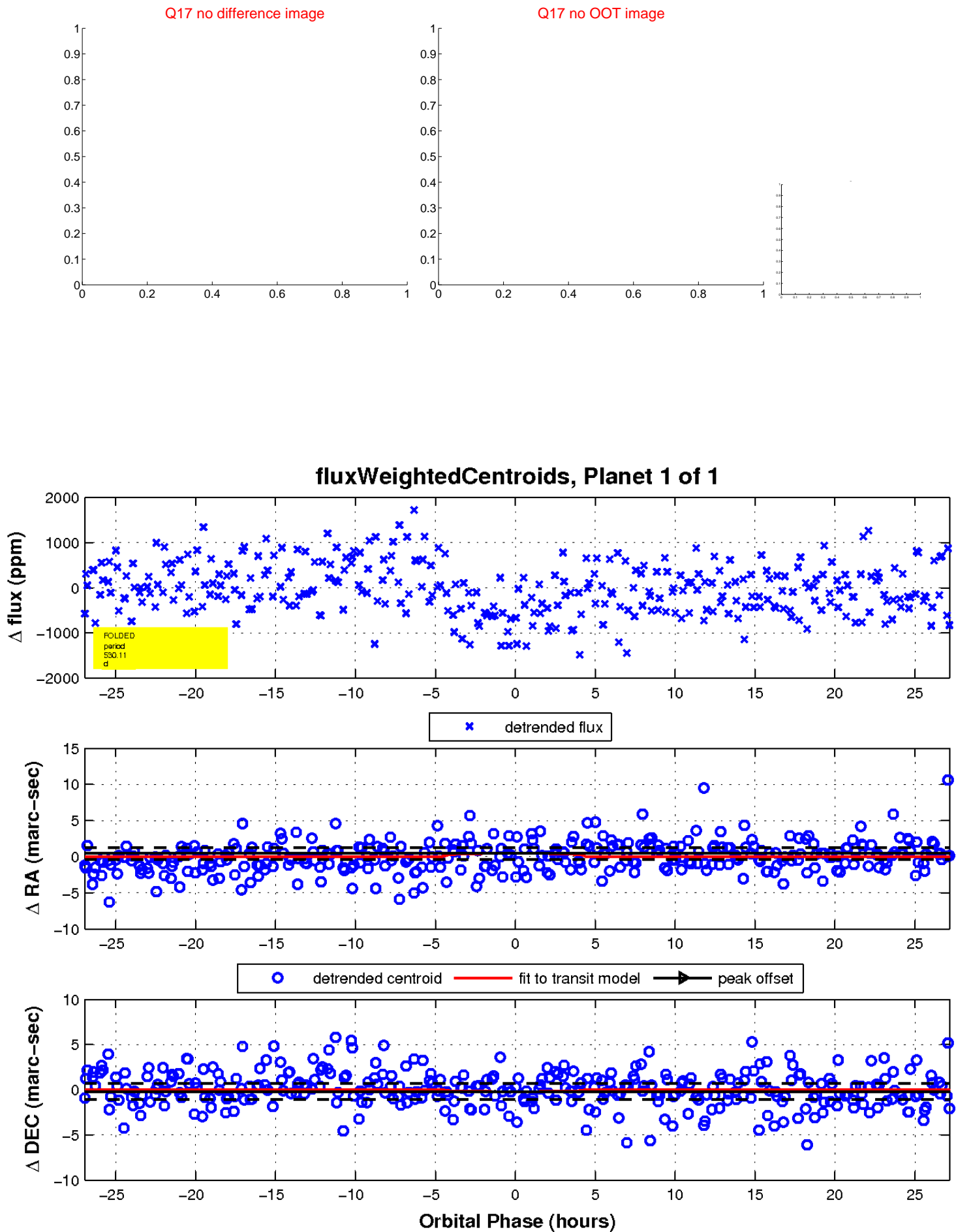
Q12 no OOT image



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

